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Passenger subways for Chicago

Chicago

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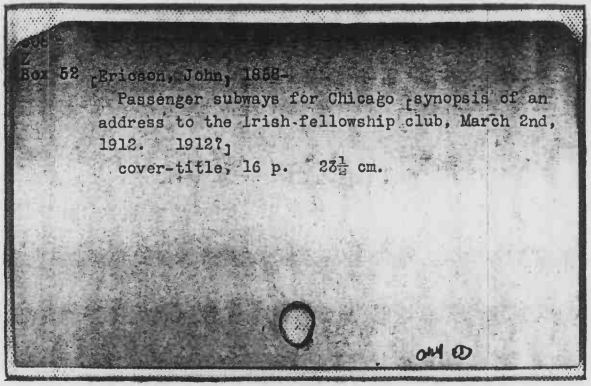
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Passenger Subways for Chicago

SYNOPSIS

of an Address to the

IRISH FELLOWSHIP CLUB

March 2nd, 1912

By

MR. JOHN ERICSON

Chairman of the

Harbor and Subway Commission

Chicago

TRANSPORTATION OF TO-DAY.

Chicago has an extensive system of surface lines, and also of elevated roads.

The surface lines, under present conditions, have to serve a dual purpose, i. e., to provide local traffic in all parts of the city, and to serve as substitutes for long distance transit as well. For long hauls in a populous city, where operated on streets in built up parts, the surface lines cannot now, and never will, give rapid transit, such as modern conditions call for. Notwithstanding our present unsatisfactory rapid transit service on the elevated roads, from 50 to 70 per cent longer time is required to reach the border of the congested district from outlying sections, even by modern surface cars, operated on reconstructed smooth tracks, than on the elevated trains.

SURFACE LINES AS FEEDERS.

The functions of the surface lines are local traffic, and to serve as feeders for the rapid transit lines.

Our elevated road systems, under present conditions. cannot develop either their full speed or their carrying capacity.

To illustrate: Local transportation in a city may be compared with the blood circulation in an animal body. If the blood circulation is affected, or faulty, through congestion or otherwise, the body immediately suffers. Vitality is impaired, and, if relief is not obtained, conditions get worse and general decline is sure to follow.

If the heart is affected, the entire circulation is impaired, and the whole body suffers. If circulation to any particular member is affected, this member suffers.

So with transportation circulation in a city. If this circulation is healthy, and unobstructed, the community grows and prospers; if transportation facilities are inadequate and

congested, and circulation sluggish, the community suffers a commercial setback; its growth and prosperity are impeded.

UNION LOOP CONGESTION.

The heart regulating the traffic circulation of our elevated roads is the Union Loop. On this two-track loop structure, with its many grade crossings, stations and curves, nearly all the trains of all the roads enter. During rush hours there is a great congestion. The movement of trains is slow and irregular. The capacity of the various roads, therefore, is greatly reduced. This necessitates the operation of great numbers of surface cars into the central district to accommodate the traffic, that cannot be handled on the elevated roads.

This again causes congestion of surface traffic in the Loop district, especially during rush hours.

NEW YORK'S SUBWAYS.

New York, with its extensive systems of surface and elevated lines, some years ago found it necessary to increase the transportation facilities by constructing an extensive system of subways. In the latter alone there are now transported nearly one million persons per day. These subways have served the purpose so well that, in order to meet further transportation demands, still larger systems are now under construction, and in contemplation, involving an expenditure of several hundred millions of dollars.

Traffic in the New York subways has increased 280.5 per cent since 1905, when they were first put into service, or from 72,722,000 rides in 1905 to 276,705,000 in 1911.

AVERAGE SPEED IN SUBWAYS.

The speed obtained in the New York subways, from Ninety-sixth street to the Brooklyn Bridge, including all stops, is between 25 and 26 miles an hour, and this can be increased when conditions at the Grand Central Station, which is the governing point, shall have been improved.

In Chicago we obtain an average speed, on the South Side Elevated Railroad, from Forty-third to Congress street, including stops, of about 17 miles per hour, and on the Northwestern Elevated, from Wilson avenue to Lake street, of about 18 miles per hour, or less than 75 per cent. of the speed obtained in New York.

YEARLY RIDES PER CAPITA.

Government statistics show that the average number of rides that a person takes each year on urban transportation lines increases with the city's growth. In a city with a population of 25,000 or less the average number of rides per year by each person is 68. In cities with from 25,000 to 100,000 inhabitants the average number of rides per year by each person is 108.

In cities of from 100,000 to 300,000 the average number of rides per capita is 185.

In cities of 500,000 inhabitants and somewhat over, the average number of rides per year, by each person, is 239.

In New York the situation is actually as follows:

Year.	Population.	Rides per Capita.
1903	3,775,123	265.0
1905	4,000,403	282.7*
1907	4,306,995	305.4
1910	4,766,883	320.9

Chicago in	1880	had a	population	of	about		500,000
"	"	1890	"	"	"	"	1,100,000
"	"	1900	"	"	"	"	1,700,000
"	"	1910	"	"	"	"	2,200,000

If we assume that the increase in the future will be at the same rate, we can expect in 1920 a population of 2,800,000 and in 1930 a population of 3,500,000.

The number of rides per capita on local transportation lines of the City of Chicago, according to available statistics, has been as follows:

Year.	Population.	Rides per Capita.
1900	1,700,000	200
1905	1,940,000	229
1910	2,200,000	300

In this is *not* included suburban traffic on steam or electric roads, which is at the rate of about 20 rides per capita.

EXPANSION OF FACILITIES NEEDED.

That immediate transportation betterments are required in Chicago must be apparent to all who have to avail themselves of the local facilities we now have.

The City's prospective growth in population, and with it

*First year of Subway.

the tendency to an increase in the number of rides per capita, calls for further planning in order to prevent a stunting of this growth.

TEMPORARY RELIEF MEASURES.

The following means for *immediate relief* may be considered:

First. Consolidation of all local transportation systems.

If all local transportation facilities were under one management, the service would be better and more economical. This also implies transfers from any one part of the city to any other part.

Second. Increase in the capacity of the present system of elevated roads, pending the construction of subways.

This would involve the following changes in Union Loop service:

First—Through routing of trains.

Second—Relocation of stations and changes in platforms.

Third—Grade separation.

Each of these steps would to some extent increase capacity and relieve congestion of the elevated roads. It has been estimated that these three steps combined would increase the capacity from 50 to 130 per cent. An average of these two extremes is what might be expected.

Even if the people of Chicago should consent to a continuance of this ugly and noisy elevated structure, in the downtown district, and should permit these alterations, such permission should be withheld until the legality of the loop franchise has been settled, or until a proposed new consolidation ordinance, embracing the use by elevated roads of municipal subways, has been passed and ratified.

Some changes in the operation and routing of surface cars, now being considered by the Local Transportation Committee, would also partially relieve the situation. Without subways, however, only temporary relief is possible. The same situation, that of inadequate transportation facilities, would again follow those measures of temporary relief.

RAPID TRANSIT SUBWAYS.

Subways have solved the transportation problem in other large cities. They are believed to be the solution of this problem in Chicago.

With an extensive system of elevated roads, incapable of developing more than a fraction of its capacity, the first logical step is to increase this capacity to a maximum. This can be done by passenger subways through the congested Loop district.

The financial limitation imposed on the Harbor and Subway Commission, namely an expenditure for subways not to exceed ten or twelve million dollars, from the so-called "traction fund," and its increment, during three or four years of subway construction, made it necessary for us to confine our efforts to such a comparatively small system. Preliminary plans for such a system of Subways were submitted to the City Council Committee on Local Transportation on October 31, 1911.

One system of Subways was designed to relieve the congestion on the Union Loop, and increase the capacity of the elevated roads.

A system to relieve surface car congestion in the Loop district was also outlined.

Considering first the subways for use by the consolidated elevated roads, the proposed routes are as follows:

NORTH-SOUTHWEST ROUTE.

This route connects the Northwestern Elevated Railway with the Metropolitan West Side Elevated Railway by a double track subway from Wells and Kinzie streets to Halsted and Pearce streets. By incline, open approach and subway, the tracks, from Wells street, are carried east in North Water street to a river tunnel at State street; ascending on the south side of the river in State street they pass under the subway of the South-Northwest Route at Randolph street. South of Randolph street they rise to the high level, holding this level south in State street to Harrison street and west in Harrison street to La Salle street, where they descend to a river tunnel at Harrison street. West of the river they rise to a portal at Harrison and Desplaines streets, thence by open approach and incline on private right of way to a connection with the Metropolitan West Side Elevated Railway, Halsted and Pearce streets.

SOUTH-NORTHWEST ROUTE.

This route connects the South Side Elevated Railway with the Oak Park Elevated Railway by a double-track subway from private right of way between State street and Wabash avenue near Fourteenth street to Green and Lake streets. By incline and open approach the tracks are carried

north from Fourteenth street, on private right of way, to a subway portal on the north side of Twelfth street, northwest across Twelfth street to State street, thence north in State street to Randolph street, west in Randolph street to La Salle street, where they descend to a river tunnel at Randolph street. West of the river they rise to Desplaines street, thence, by open approach and inclines and elevated structure, they are carried across Halsted street and north in Green street to a connection with the Oak Park Elevated Railway.

APPROACHES AND STATIONS.

The approaches connecting subways and the elevated structures as shown may be changed to meet conditions without any serious interference with the general scheme.

Stations have been laid out for estimating purposes, but are not shown on the plans.

Transfer stations can be located along State street. Stations of sufficient capacity to take care of all other traffic can be located at other places along the proposed routes.

THROUGH-ROUTE EXPRESS SERVICE.

With this system built, the express trains of the Metropolitan Elevated Railway can enter the subway and continue on the express tracks of the Northwestern. The Oak Park Elevated Railroad, which should receive on its tracks the Humboldt Park and Logan Square branches of the Metropolitan, can send its express trains in the Northwest-South branch of the subway and continue on the express tracks of the South Side Elevated road.

In this manner, the four great divisions of the city would be connected by arteries of rapid transportation, traversing same and passing through the central district. Such divisions as cannot be conveniently and economically connected by crosstown or other routes would be provided with through route service. Since from 70 to 80 per cent. of passengers using the elevated roads make the central district their destination, the routes must necessarily pass through the same in order that these passengers may be accommodated and the undertaking made a paying proposition.

LOCAL TRAFFIC.

There are still the local trains to consider. Of course, if the elevated Loop remains the local trains could use the Loop

as before. To remove the Loop, and yet develop full capacity of the local tracks, the Commission suggests that, for instance, the tracks of the Oak Park Line, in Fifth avenue, be connected with the tracks of the stub-terminal in Market street, forming a minor loop, in which case the full capacity of these local tracks can be developed. The same can be done with the local trains of the Metropolitan road. There would be required a short connection between the main tracks and the stub-terminal in Franklin street permitting the trains, coming in on Van Buren street, to go to the present stub-terminal in Franklin street and return by means of the loop thus formed. By making a short connection in Congress street, the South Side Elevated Road locals would be taken care of. A track in Clark street connecting the Fifth avenue line with the stub-terminal on North Water street would develop full capacity of the Northwestern local tracks. These arrangements, of course, would involve the construction of some additional tracks for local trains, so that local traffic would not interfere with traffic on the express tracks.

ESTIMATED CAPACITIES.

The combined capacities of all the elevated roads, with present facilities, during rush hours, in cars entering or leaving the central district are: "Loop" 622 cars, and stub-terminals 293 cars per hour. This makes a total capacity of 915 cars per hour, entering or leaving the central district.

With express trains of the various elevated roads routed through the subways, instead of on the Union Loop, the capacity of these elevated roads would be increased to 1,600 cars per hour on express tracks, and to 1,600 cars per hour on local tracks, rearranged to form small loops as described, or to a total of 3,200 cars per hour as against the present 915, an increase of 250 per cent.

UNION LOOP UNNECESSARY.

It has been suggested that the Fifth avenue and the Van Buren street legs of the Union Loop be retained for use of local trains. This arrangement would have some advantages and some disadvantages. It would permit through routing of local trains from one to any other division of the city on the elevated structures. On the other hand, if universal through routing of trains from the several branches of one road to each branch of the other elevated roads, by means of these

two tracks or legs, would be desired, the multiplicity of cars, representing the different lines, would cause exasperating delays and confusion at the stations. By through routing only trunk line trains, from one division to any other, and by retaining shuttle trains and transfers, there would be less objectionable operation under this arrangement.

It is *not* necessary to retain any part of the Union Loop. A greater capacity of this system can be obtained without it.

ESTIMATED COST OF SUBWAYS.

The estimated cost of this system of subways for elevated trains, including subways, paving, stations complete, three two-track river tunnels, protection to buildings, sewers and water systems, engineering and contingencies, but exclusive of trackage and electrical installation, is $9,812,000. Considering, however, the necessary changes and additions to the elevated structures, suitable rolling stock for subway service, additional electrical equipment, etc., an estimated expenditure by the operating company of some $35,000,000, in addition to the cost of subways, would be required.

RAPID TRANSIT NECESSARY.

Chicago, to become a real metropolis, needs up-to-date transit facilities giving not only required capacity for both the present and the future, but the greatest *speed* consistent with safety that science will permit.

The factors in real rapid transit are:

1—High speed and comfort.
2—Close headway.
3—Reliability and regularity of service.
4—Uniform schedules.
5—Proper distribution of stations.

Persons living 10 or 12 miles, or even further, away from the city's center should be able to reach their places of business there in the morning and return in the evening, without spending more than 1½ hours per day in traveling both ways, even when located some distance from the rapid transit line.

INDEPENDENT SUBWAY SYSTEM.

Irrespective of present facilities for transportation, even after being improved to maximum possible capacity, and notwithstanding that the present financial limitation does not

permit it, Chicago, in the near future, will need an extensive and modern rapid transit system, that will traverse and interconnect the various sections of the city.

Elevated roads, while less expensive in first cost, are objectionable, especially in well-built-up districts. They are noisy and unsightly. They obstruct light and interfere with free use of the street. At certain seasons weather conditions interfere with regularity of service. Additional, modern rapid transit facilities for this city, therefore, should consist of subways.

On February 21 plans were presented, by the Harbor and Subway Commission, to the Local Transportation Committee outlining such a system, reaching out through the various city divisions, on the north to Lawrence avenue, on the south to Sixty-third street, on the southwest and on the northwest to Fortieth avenue.

PLANS FOR CITY'S SUBWAYS.

These plans contemplate four-track subways (two tracks for express service and two tracks for local service). When approaching the congested district, the express and local service trains would be diverted to separate subways to meet physical and operating conditions.

Such parts of the proposed independent subways as are located in the congested district, and intended for express service, are exactly the same as the proposed routes for initial subways, to be used in connection with the present elevated roads.

The estimated combined capacity of this independent subway system is 160,000 seats per hour. The estimated cost of these subways, including stations, is $57,400,000.

The necessary trackage, electrical equipment, rolling stock, etc., to furnish a complete system, ready for operation, will require an additional expenditure by the operating company of some $45,600,000.

INITIAL SUBWAYS FIT EITHER PLAN.

The purpose of presenting this latest plan at this time is twofold.

First. To show that initial subways through the congested district, as suggested, will form a link, not only in an independent subway system, but will fit into a subway system for the accommodation of the present elevated roads. There-

fore, whether satisfactory arrangements with present transportation companies to use such subways are made or not, the necessity for immediate consideration of initial subways still remains. Should these initial subways be constructed, and utilized by the elevated roads, additional future subways could be built through, and adjacent to, the congested district.

Second. To furnish some idea as to the comparative capitalization of an independent subway system and a system of combined elevated roads and subways as outlined.

On account of the large expense for modern subway rolling stock, additional electrical equipment, additional trackage, etc., in addition to the cost of subway construction, that would be required to bring the present elevated road system to a capacity equivalent to the capacity of the proposed independent subway system, it is my belief that the latter, with an equal number of miles of single track, would not represent any larger capital investment than that of the former.

CHICAGO AND NEW YORK.

The question is this, however:

When will the traffic in Chicago warrant such large expenditures for a transportation system in addition to our present facilities?

The same question was raised in New York when subways were under consideration there.

NEW YORK TRAFFIC STATISTICS.

Now York's statistics show that, irrespective of the great additional means of transportation provided by subways, traffic on the elevated roads has increased from 266,382,000 in 1905, when trains through subways were first operated, to about 300,000,000 in 1911. Traffic on the surface lines has increased from 374,554,000 in 1905 to 427,000,000 in 1911 in the borough of Manhattan, and from 37,125,000 in 1905 to 84,000,000 in 1911 in the borough of Bronx—the two boroughs through which the subway trains operate. In those years traffic in the subways also increased 280.5 per cent, as before shown.

FACILITIES CREATE TRAFFIC.

These increases would undoubtedly have been still greater if more capacity could have been provided.

If this is the case in New York, why would it not be so in Chicago?

Either we will have to admit this or quit boasting that our city before very long will be the greatest in the country.

If New York, with a debt of over one thousand millions of dollars, can find a way to adequately meet requirements for modern transportation, why cannot Chicago, with a debt of only about fifty millions, do so?

SURFACE CAR SUBWAYS.

The Harbor and Subway Commission has also outlined tentative possible routes for surface car subways, through the congested district.

Like the proposed subways for rapid transit, these surface car subways are also projected so that cars from the Northwest Division would be routed to the South Division through the congested district, from the Southwest Division to the North Division, and vice versa. The river tunnels at Washington and La Salle streets would be used in connection with these subways. A city ordinance provides that these tunnels shall become the city's property upon payment to the Chicago Railways Company, by the city, of actual cost, plus 5 per cent. If arrangements were made with said company for use of the Van Buren Street tunnel, the surface car subway could connect therewith. Otherwise a new river tunnel, on the line of Jackson boulevard, would be necessary.

The estimated cost of this surface car subway system, including stations and three river tunnels, but exclusive of equipment, is $9,328,000.

SURFACE CAR CAPACITIES.

The capacity of the present surface track system in the downtown district, according to transportation experts and officials, is 1,037 cars per hour, entering or leaving this district. It is estimated that by rearrangement of loops and by some other traffic regulation this capacity can be increased to 1,300 cars per hour.

The surface car subways here outlined are estimated to furnish capacity, for the movement of cars through the same, of 720 per hour as a maximum. This would increase the total capacity of surface car service, over and above the capacity that can be obtained without subways, by only 55 per cent.

As the proper function of surface car systems is to transport people from the immediate vicinity of their homes to

the nearest rapid transit station, and to accommodate local traffic in all parts of the city, the necessity for running great numbers of surface cars, from all outlying districts, into the congested central district would cease, if the city were provided with adequate rapid transit facilities.

Since numerous cars from nearly all city districts now enter the congested district, the number of districts that would be served by such proposed surface car subways would either be very limited, owing to meager capacity, or else only a few cars from each district could be routed through the subway. Either plan would cause much delay and confusion at subway stations.

MORE VALUE IN RAPID TRANSIT SUBWAYS.

The wisdom of expending nearly as large a sum of money for surface car subways as is required to build subways for use of the elevated roads, may well be questioned. Such a sum might be expended to better advantage for real rapid transit.

Surface car subways are nowadays constructed in exceptional cases only. No surface car subways have been constructed in New York, nor are there any contemplated.

Boston, the pioneer American city in subway construction, had a special problem to deal with. There were no obstructions to the free movement of elevated trains. The congestion of surface cars on Tremont street, by lack of adequate rapid transit facilities, and owing to the uniformly narrow and tortuous streets of the city, was so great that a subway became imperative.

Elevated trains were later routed through this subway, but its construction was such that this service had to be abandoned and a new subway constructed for their accommodation. I am reliably informed that no more surface car subways will be constructed in Boston.

TEMPORARY SURFACE CAR SUBWAY IN HALSTED STREET.

There is proposed a future rapid transit subway in Halsted street. I am of the opinion that the traffic conditions in this thoroughfare at present are exceptional, and require a subway from about Chicago avenue on the north to Twelfth street on the south, for the accommodation of surface cars. This would greatly relieve traffic congestion in this street.

Such a subway, with stations, but exclusive of equipment, is estimated to cost $3,500,000. If constructed, this subway should later be incorporated in the proposed future rapid transit subway extending farther north and south in the same thoroughfare.

EFFECT OF SUBWAYS ON TRAFFIC.

The estimated effect on traffic of the first proposed step in subway construction, for the use of elevated roads, would be an increase in carrying capacity of these elevated lines from 915 to 3,200 cars, or from 45,750 to 160,000 seats per hour, an estimated increase of 250 per cent, as already shown.

Such a substantial increase, with added speed obtainable by a free movement of trains through the congested district, and other improvements in the elevated road system, would considerably relieve the traffic on surface lines. Fewer surface cars would be required to reach the downtown district, thus relieving traffic congestion there.

The *independent* system of subways would also have a capacity of 160,000 seats per hour, which, of course, would be in addition to the capacity of existing traction systems.

It has been said that such an independent system would serve only territory immediately adjacent, if there were no transfers from surface cars to subways.

The average haul of each passenger using elevated roads in Chicago is estimated at 4½ miles.

The estimated average haul of each passenger on surface car systems is from 3½ to 4 miles, or nearly equal to that of the elevated roads.

Considering the present long trips of surface cars and abnormally great dead mileage, also that the average haul per passenger as well as dead mileage would be greatly reduced, with subways in operation, the saving in operating expenses on the surface car system could be applied to the cost of subway service, thus warranting transfers from one system to the other, whether under one ownership or not.

EFFECT OF SUBWAYS ON REAL ESTATE.

The effect that passenger subways may have on real estate is perhaps best illustrated by New York's experience.

The City Club of New York, after a thorough investigation of the increase in real estate values, before and after the building of subways, reported in 1908 that in the borough of Manhattan "the aggregate rise in land from 135th street

to Spuyten Duyvil was about $69,300,000. If an estimated normal rise of $20,100,000, based upon the rise of the previous seven years, be subtracted from this, it leaves a rise of about $49,200,000 apparently due to the building of subways."

As regards the effect on land values in the borough of Bronx, the same report says: "The aggregate increase in land values (of a district extending about a half mile either side of the subway) due to the building of the subway and in excess of a normal rise of $13,500,000, was about $31,300,000."

"The property benefited in the districts above noted could have paid the entire cost of subways and yet have had a net profit due solely to their construction and operation of over $37,500,000. Had it paid only for the portion running through its own territory, there would have remained a profit of over $67,425,000."

EFFECT OF SUBWAYS ON BUSINESS IN OUTLYING DISTRICTS.

There is some opposition to subways based on the claim that they injure business conditions in outlying districts. That subways, with consequent rapid transit, will greatly stimulate business conditions and prospects in outlying districts instead of injuring them, is too apparent to require much comment.

The prosperous business districts in the outlying parts of our city owe their development principally to transportation facilities.

The remarkable increase in surface car traffic in the borough of Bronx, New York, amounting to 138 per cent in five years, after subway service had been extended to this section, is an indication of the effect of rapid transit on outlying districts.

SHORTSIGHTED OPPOSITION.

There are some who would sacrifice the welfare of the entire community rather than see any action taken whereby some section of the city would profit more than the one in which they live and own property.

I believe that the objectors to these much-needed transportation betterments are greatly in the minority, and their attitude should be changed. If not, they should be ignored by all citizens who have our city's welfare at heart.

MSH 2-1207

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